RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Long-term Annual Exchanges of up to 4,000 acre-feet of Water per year between Paramount Citrus Association and its Related Companies and the Tulare Irrigation District

EA-08-41

U.S. Department of the Interior
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Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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List of Acronyms, Abbreviations and Definition of Terms

af	acre-feet
af/yr	acre-feet per year
CNDDB	California Department of Fish and Game Natural Diversity Data Base
Contract Year	March 1 – February 28 (29)
CPDC	Consolidated People's Ditch Company
CVC	Cross Valley Canal
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWD	Cawelo Water District, a non-long-term CVP Contractor
DWR	Department of Water Resources
EA	Environmental Assessment
FDC	Farmer's Ditch Company
FKC	Friant-Kern Canal
FWCA	Fish and Wildlife Coordination Act
FWS	U.S. Fish and Wildlife Service
ITA	Indian Trust Assets
KCWA	Kern County Water Agency
KTWD	Kern-Tulare Water District, a Cross Valley Contractor
M&I	municipal and industrial
MID	Madera Irrigation District, a long-term CVP Contractor
MP	Milepost
NHPA	National Historic Preservation Act
NKWSD	North Kern Water Storage District, a non-long-term CVP Contractor
PCA/PFC	Paramount Citrus Association/Paramount Farming Company. PCA and PFC are privately held entities that are owned exclusively by Stewart Resnick and Lynda Resnick and are engaged in agricultural operations in the Southern San Joaquin Valley.
Rayo water	PCA's Rayo Ranch Kaweah River pre-1914 appropriative water right
Receiving/ Exchanging Agencies	Cawelo Water District, Kern-Tulare Water District, Madera Irrigation District, North Kern Water Storage District, Shafter-Wasco Irrigation District and Southern San Joaquin Municipal Utility District
Reclamation	U.S. Bureau of Reclamation
RRA	Reclamation Reform Act
Service	U.S. Fish and Wildlife Service
SOD	South of Delta
SSJMUD	Southern San Joaquin Municipal Utility District, a long-term CVP Contractor
SWID	Shafter-Wasco Irrigation District
SWP	State Water Project
SWRCB	State Water Resources Control Board
TID	Tulare Irrigation District, a long-term CVP Contractor
WA	Warren Act
Wutchumna	Wutchumna Water Company
Zone 7	Alameda County Flood Control and Water Conservation District Zone 7

Section 1 Purpose and Need for Action

1.1 Background

The San Joaquin Valley in California has historically experienced periods of drought and flooding. Water agencies strive to prepare for varying water supply conditions to the extent possible so that agricultural or urban water supply needs can be met regardless of the type of water year. This is done by having a variety of water supply options that can be implemented as needed. Having the ability to move water supplies from an area of greater supply to an area of lesser supply has historically been successful in balancing these needs.

Paramount Citrus Association (PCA) and Paramount Farming Company (PFC) (a related entity) have historically transferred and exchanged water among their companies and move water to ~~its~~ farming operations in greatest need throughout the San Joaquin Valley. These exchanges have typically occurred to allow water delivery on common landholdings in Cawelo Water District (CWD), Kern-Tulare Water District (KTWD), and Madera Irrigation District (MID), North Kern Water Storage District (NKWSD), Shafter-Wasco Irrigation District (SWID), and Southern San Joaquin Municipal Utility District (SSJMUD). Root Creek Water District (RCWD) encompasses PCA and PFC land holdings however no previous exchanges have occurred with RCWD due to the lack of delivery facilities. CWD, KTWD, MID, NKWSD, SWID and SSJMUD will be referred to in this document as the Receiving/Exchanging Agencies.

The Wutchumna Water Company (Wutchumna) began diverting Kaweah River water in the 1800's, and has historically diverted an average of 56,000 acre-feet/year (af/yr) under its pre-1914 appropriative right. PCA is a shareholder of Wutchumna due to its ownership of Rayo Ranch, as is Tulare Irrigation District TID, and is entitled to 9,000 acre-feet (af) of Kaweah River water in most years. (The Rayo Ranch is a stockholder in the Wutchumna.)

Beginning in the late 1980s, PCA converted the irrigation system used on the Rayo Ranch from a flood irrigation system to a micro-sprinkler irrigation system. PCA was able to decrease yearly water use for irrigation on the Rayo Ranch property from approximately 9,000 af to 5,000-6,000 af. The excess has been delivered to other PCA property or to property of Paramount Farming Company to irrigate established crops. PCA and PFC are separate corporations formed separately to focus on different crop production, citrus and nuts respectively, owned by the same person who manages the water rights for the benefit of both companies. PCA and/or PFC have irrigable acres in each of the Receiving/Exchanging Agencies. While groundwater is available and has been used to supply these lands with irrigation water supplies in past years, the pumping costs and the water quality make the groundwater less desirable than importing the Rayo Ranch water.

TID has stock rights in Wutchumna and has easy access to the supply and delivery of the high quality river water through the Wutchumna Ditch where they take their own Kaweah River supplies. TID manages the Rayo Water Company and, as part of that management, is tasked with facilitating PCA's use of their Rayo water.

PCA, TID and the Receiving/Exchanging Agencies are all located within the CVP Friant Division permitted place of use boundary as established by the State Water Resources Control Board (SWRCB).

A brief description of the parties that would be involved includes TID, PCA, PFC, CWD, KTWD, MID and NKWSD. Please see Section 3.1.1 for details on the parties involved and Figure 1-1 for locations.

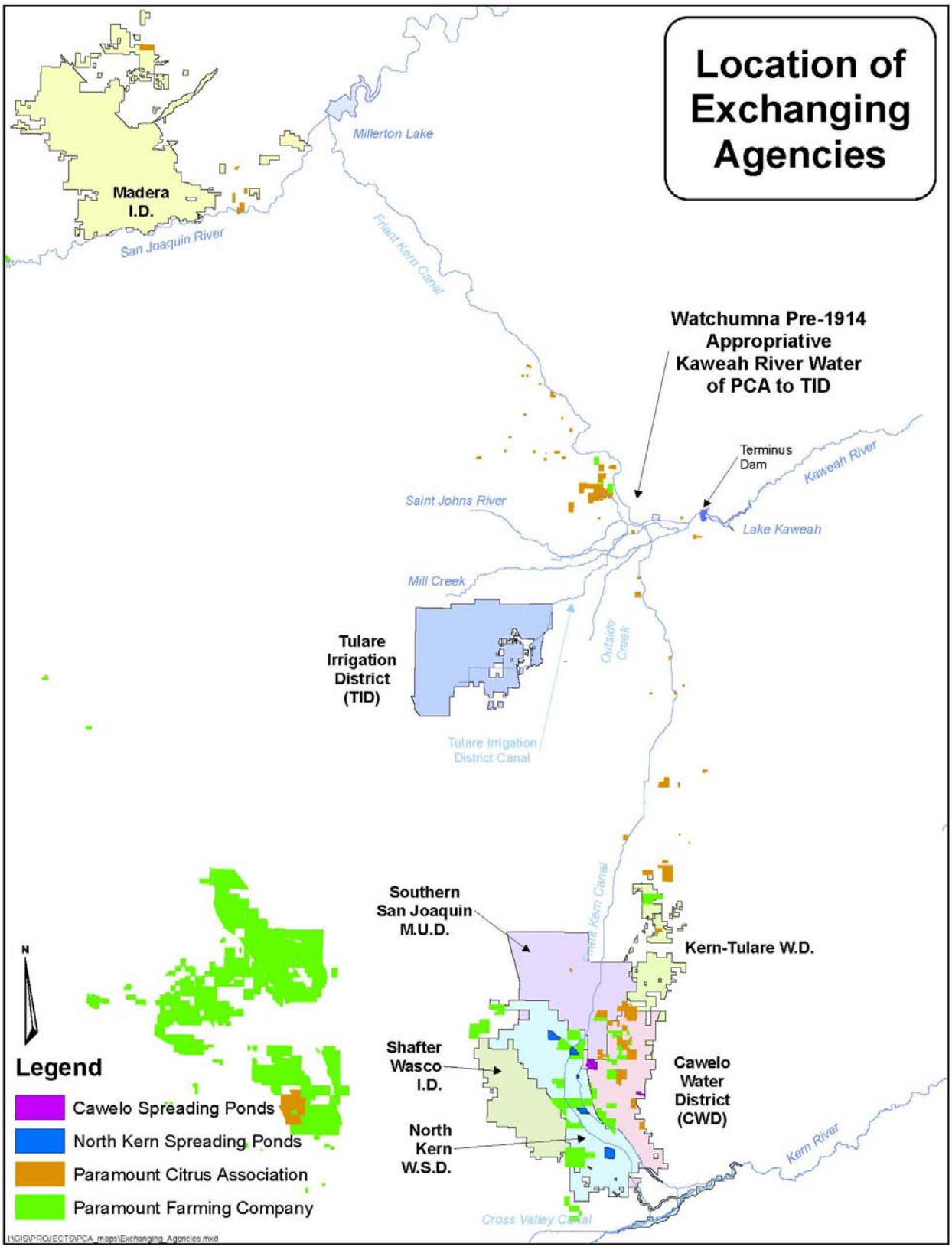

Figure 1-1 Location Map

1.2 Purpose and Need

The Bureau of Reclamation's (Reclamation) purpose is to fulfill its mission which is to manage, develop and protect water and related resources in an environmentally and economically sound manner in the interest of the American people. In order to fulfill its mission Reclamation facilitates water delivery that will benefit efficient and effective water use. Reclamation's purpose under the Proposed Action would be to fulfill its role as Contracting Officer and approve exchange requests.

PCA and PFC need to cost effectively and efficiently supplement the water supplies on their landholdings within the Receiving/Exchanging Agencies' and to prevent the use of more expensive and poorer quality groundwater on their lands in dry years and to augment the groundwater aquifer in wet years to provide future supplies for conjunctive use. In wet years, some or all of the CVP Water may be used for groundwater recharge in the recipient districts.

1.3 Scope

The scope of this analysis encompasses the environmental impacts associated with the annual exchange of CVP Water for a like amount of pre-1914 Kaweah River water right (Rayo water). The time frame examined in this document is the period of 2010 through Contract Year 2026 (March 1, 2010 through February 28, 2027). The action area is the service area boundaries of TID and the Receiver/Exchanger Agencies as well as the conveyance facilities needed to deliver the Rayo water and the exchanged CVP supplies.

1.4 Potential Issues

The following resource categories will be examined in this environmental assessment (EA):

- Water Resources
- Land Use
- Biological Resources
- Socioeconomic Resources
- Environmental Justice
- Global Climate Change
- Cultural Resources
- Air Quality
- Indian Trust Assets

Comprehensive evaluation of cultural resources issues was eliminated from detailed environmental analysis as the Proposed Action would exchange water through existing facilities and therefore would not be the kind of action that would impact cultural resources. Additionally as there is no pumping needed to effectuate the project, air quality was also eliminated from analysis. Indian Trust Assets (ITAs) was also eliminated from detailed environmental analysis as there are none in the action area.

Section 2 Alternatives Including the Proposed Action

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not approve the exchange of up to 4,000 acre-feet per year (af/yr) of CVP water supplies for non-CVP water between TID and the Receiver/Exchanger Agencies. In the absence of approval by Reclamation, the Rayo water would be transferred by PCA to TID for recharge in TID. PCA has relied on its historically firm allocation from each of the districts, and supplemented any shortfalls with water banked in the Kern Water Bank (and other banking projects). With allocations fluctuating and recent multi-year withdrawals depleting their Kern Water Bank balance, additional water sources would need to be found to stabilize these fluctuating supplies. Landowners in the Receiving/Exchanging Agencies might have to pump groundwater. This would likely require additional wells to be constructed leading to further reduction in available groundwater.

2.2 Proposed Action

Reclamation proposes to approve annual exchanges of up to 4,000 af/yr of TID's CVP Water allocated under Friant Division long-term water service contract number 175-2485-LTR1 (Contract) for an equal amount of PCA's Rayo Ranch non-CVP water deriving from pre-1914 water rights on the Kaweah River. TID would use the non-CVP water within its Contract service area boundary in compliance with the Reclamation Reform Act (RRA) and in the Friant Biological Opinion, while the exchanged CVP Water would be used on PCA or PFC's agricultural lands situated within the Receiving Agencies' service area boundaries for irrigation purposes during Contract Years 2010 through 2026, but without any RRA restrictions (See Figure 1-1.)

The Rayo water deriving from Wutchumna Ditch rights are pre-1914 appropriative rights on the Kaweah River owned by the Wutchumna Water Company. PCA is a stockholder with about 25 shares in the Wutchumna Water Company.

The Rayo water involved in this exchange would be diverted from the Kaweah River to TID through existing facilities consisting of the Wutchumna distribution system and the TID Main Canal. It would then be delivered through TID's distribution system for irrigation of crops in TID. The CVP water received by the Receiving Agencies would be diverted from the San Joaquin River at Friant Dam under Reclamation's normal operations, conveyed through the Friant-Kern Canal (FKC) and/or the Madera Canal, and delivered via the existing distribution facilities of the Receiving Agencies for irrigation of PCA and/or PFC crops within the Friant Division permitted place of use.

The exchange, taking the following form, would not require execution of a Warren Act contract:

- For every af of PCA's Rayo water delivered to TID, one af of TID's CVP water would be delivered to one or a combination of the Receiving Agencies. TID's CVP water would be released from the FKC into each of the Receiving Agencies existing facilities.
- The proposed exchange is expected to match the Wutchumna deliveries to TID with the CVP deliveries to the Receiving Agencies on a "bucket for bucket" basis.

- Operationally, the actual amounts delivered may differ slightly. The Proposed Action anticipates that if an imbalance were to occur, TID would receive more non-CVP water than the quantity of CVP water delivered to the Receiving Agencies. Up to a 5 percent imbalance of Non-CVP water received by TID annually as an operational contingency would be within the scope of the Proposed Action. Over- deliveries would be considered operation losses.
- Each exchange transaction has up to three calendar years to balance. For example, once the first block of CVP Water is delivered to a Receiving Agency, the corresponding block of non-CVP water must be returned to TID in full no later than three-years from the date of CVP water movement. The last block of CVP water being exchanged must be delivered to a Receiving Agency up through a period of time whereby ample time is allowed for the balanced return to take place before February 2027, when the Contract terminates (i.e. before February 2024).

The exact delivery schedule cannot be determined due to the various water supplies of each Receiving Agency and the uncertainty of the yield of each of these supplies, or combined yield of these supplies in a given year. However, Table 2-1 illustrates some examples of supplies and expected yields, and how the exchanged CVP water could be used in each situation.

Receiving/ Exchanging Agency	**Primary Water Supply Sources**	Potential Water Supply Conditions	**Purpose of Delivery**
CWD	State Water Project (SWP), Kern River, groundwater	Low SWP allocation, low Kern River yield. Reduced district and landowner well efficiencies.	PCA/PFC irrigation demands to supplement low allocation, and in lieu of groundwater pumping,
KTWD	Cross Valley CVP, Kern River, and groundwater	Low Delta CVP allocation, low Kern River yield. Reduced landowner well efficiencies.	PCA/PFC irrigation demands to supplement low allocation. PFC has wells in this district but PCA does not and must rely solely on district supplies.
MID	Friant Division CVP and Pre-1914 Water Rights (WR)	Low Friant CVP allocation and potential loss of long-term reliability from San Joaquin River Restoration.	PCA/PFC irrigation demands in lieu of groundwater pumping,
NKWSD	Kern River and groundwater	Average/above average SWP/CVP allocations, low Kern River yield.	Banking for later use on established PCA/PFC lands, and in lieu of groundwater pumping.
SWID	Friant, CVP, and groundwater	Low Friant allocation and potential loss of long-term reliability from San Joaquin River Restoration	PFC irrigation demands in lieu of groundwater pumping.
SSJMUD	Friant CVP, and groundwater	Low Friant allocation and potential loss of long-term reliability from San Joaquin River Restoration.	PCA/PFC irrigation demands to supplement low allocation, and in lieu of groundwater pumping,

Table 2-1 Examples of Potential Deliveries

The non-CVP water delivered to TID would assume the characteristics of CVP water from the Reclamation Reform Act (RRA) perspective. Conversely, the CVP water delivered to the Receiving/Exchanging Agencies, while being used in the CVP Friant Division permitted place of use, would not be subject to the RRA.

The exchange proposal includes the following:

- The CVP water to be exchanged would only be used for agricultural purposes or groundwater recharge within the identified water service areas or boundaries of the Receiving Agencies. The non-CVP Rayo water supply made available from the Rayo Ranch would be used to supplement the combined needs of both PCA and PFC and/or to provide direct or in-lieu groundwater recharge within one or a combination of the Receiving Agencies.
- The CVP water and Rayo water would only be used for beneficial purposes and in accordance with federal Reclamation law and guidelines.
- The CVP water and Rayo water would not be used to place native lands or lands that have been fallowed and untilled for three or more consecutive years into production, or to convert undeveloped land to other uses.
- The proposed exchange would not adversely affect CVP operations or operations of the Receiving or Exchanging Agencies as deliveries would occur only if consistent with established operational guidelines.
- The movement of any water under this proposal would not require the construction of any new water diversion or conveyance facilities.
- The CVP water and non-CVP Rayo water would be conveyed through existing facilities with no new construction or modifications of facilities required for this exchange.
- There would be no introduction of non-CVP Rayo water into CVP facilities.
- No land conversions or other activities that alter or degrade the suitability of habitat for fish and wildlife species would occur by the delivery of either CVP Water or non-CVP water. No degradation of CVP Water would occur as a result of the Proposed Action. No modification of conveyance facilities, nor construction or new land disturbing activities of any kind, would occur as a result of this proposed exchange.
- Environmental and compliance reviews would be conducted periodically but no less than every 5 years.
- Annual approval would be required for the particular exchanges proposed in that Contract Year.
- Water delivery under the Proposed Action would comply with all Federal, State, Local, or Tribal laws and requirements imposed for the protection of the environment and Indian Trust Assets.

Section 3 Affected Environment and Environmental Consequences

This section discusses the environments within TID and the Receiving/Exchanging Agencies' service areas, and the conveyance facilities that would be used to move the exchanged water.

The TID and the Receiving/Exchanging Agencies are located south of the Sacramento-San Joaquin Bay and Delta in California's southern San Joaquin Valley in portions of Madera, Tulare and Kern Counties (Figure 1-1). The TID and the Receiving/Exchanging Agencies are located east of the Coast Range, west and north of the Tehachapi Mountains at the base of the grapevine, a synclinal trough with a north-south axis.

3.1 Water Resources

3.1.1 Affected Environment

The current Proposed Action includes six Receiving/Exchanging Agencies and the provision for approval through water contract year 2026 (with five-year reviews). Exchanges made under a previous program included those described in Table 3-1.

Year	Quantity (af)	Entity	Destination
2002	1,800	PCA	Irrigation in CWD.
2003	2,000	PFC	Recharge for benefit of CWD.
	850	PCA	Irrigation in SSJMUD.
	650	PCA	Irrigation in CWD.
2004	2,291	PFC	Recharge for benefit of CWD.
	850	PCA	Irrigation in SSJMUD.
2005	3,150	PFC	Recharge for benefit of CWD.
	850	PCA	Irrigation in SSJMUD.
2006	4,000	PFC	Irrigation in CWD.

Table 3-1 Historical Exchanges

Tulare Irrigation District

TID was formed in 1889 and is located in western Tulare County on the eastside of the San Joaquin Valley. The city of Tulare lies on the eastern portion of the District at the intersection of the Southern Pacific and Santa Fe Railroads and on U.S. Highway 99.

TID provides only agricultural water supplies and does not service the city of Tulare. Water for the city of Tulare is extracted from the ground and furnished through City owned facilities.

TID entered into a long-term renewal contract with Reclamation in 1952 for 30,000 af/y of Class 1

and 141,000 af/y of Class 2 water. The district has pre-1914 water rights on the Kaweah River for approximately 50,000 af/y of water. The district owned Kaweah River water rights are 1) Crocker Cut on the Lower Kaweah Branch, 2) St. Johns Canal (TID) on the St. Johns Branch and 3) Crossmore cut Packwood Creek) on the St. Johns Branch. Water is also made available through share holdings in the following Kaweah River agencies: 1) Tulare Irrigation Company on both the Lower Kaweah Branch and the St. Johns Branch, 2) Evans Ditch Company on both the Lower Kaweah Branch and the St. Johns Branch, 3) Wutchumna Water Company on the Kaweah River, 4) Persian Ditch Company, and 5) Consolidated Peoples Ditch Company. Groundwater recharge occurs from percolation in the canals and natural channels, and treated municipal and industrial effluent. TID has 12 groundwater recharge areas covering a total of 1,110 acres. The district does not operate extraction wells.

TID obtains their CVP water supplies from its turnout which is located approximately 14 miles northeast of the District Service Area. The water is conveyed in the District's Main Canal. Diversions into this Main Canal include water from the Kaweah and St. Johns River Branch. The Packwood Creek diversion system begins at the terminus of the Lower Kaweah River approximately 10 miles northeast of TID. The District's distribution system includes 300 miles of unlined canals, ¼ mile of lined canal and 30 miles of pipeline.

Paramount Citrus Association

PCA was founded in 1950 by Mr. Lou Ghiz with the objective of giving independent orange growers an opportunity to market the juice as well as the fruit outside of the Sunkist Cooperative. In 1981 the company was bought by Mr. Stewart and Mrs. Lynda Resnick, who remain the sole owners today. In 2004, the company began selling its Clementine mandarins under the California Cuties™ brand, which is sold and marketed through a joint venture with Sun Pacific. PCA also began marketing its citrus varieties under the Paramount Citrus brands in 2006 which it continues to do.

PCA also owns and operates packing facilities in Delano, California and Visalia, California. PCA's primary water use is for agricultural irrigation. Various supplies (see Table 2-1) are used for the irrigation of PCA's citrus trees depending on the water district or the area the specific lands are located within. PCA receives water from the City of Delano to serve the Delano packing facility, and receives water from wells and Rayo surface water to serve the packing facilities. Rayo water supplies are used for citrus irrigation in addition to use by the packing facilities.

Paramount Farming Company

PFC is the largest grower and processor of almonds and pistachios in the world with more than 70,000 acres of pistachio and almond orchards located in California's San Joaquin Valley. PFC's nuts are sold to consumers under the Sunkist® and Everybody's Nuts™ brand names as well as under private label and in bulk.

Various water supplies (see Table 2-1) are used for the irrigation of PFC's almond, pistachio and pomegranate trees depending on the water district or area the specific lands are located within.

Cawelo Water District

CWD is located in the North-Central portion of Kern County and encompasses an area of nearly 45,000 acres. CWD lies between State Highway 99 on the west and State Highway 65 on the east, the community of McFarland on the north and Oildale on the south. The city of Bakersfield is approximately six miles southeast of the District.

CWD is an agricultural only water district. Approximately 65 percent of the irrigation demands within CWD have historically been satisfied with imported surface water deliveries. CWD surface water supply is obtained primarily under two long-term contracts: a contract with the Kern County Water Agency (KCWA) for State Water Project (SWP) water and a contract with the city of Bakersfield for Kern River water. Water from these two sources has accounted for 90 percent of CWD's surface water supplies. CWD also purchases water from many other sources under short-term agreements, as available. The imported surface water serves as a supplemental supply for irrigation within the district.

CWD obtains surface water from other sources including diversions from Poso Creek when available, oil-field produced water, and CVP water through one-year temporary water service contracts for unstorable flood flows when available.

CWD obtains its SWP water from the California Aqueduct via the Cross Valley Canal (CVC), operated by KCWA, near Tupman diverted to the Beardsley/Lerdo Canal and into CWD's distribution system.

CWD receives CVP surplus water when available during years of excess Friant Division water supplies from the FKC by way of the CVC and its extension, of which CWD is a 27 percent owner. The CVP water is pumped from the CVC extension through the CWD's pump station and conduit "A" and is discharged into the Beardsley/Lerdo Canal and conveyed to pump station "B", for delivery through the CWD's distribution system where it serves approximately 33,320 irrigated acres.

Individual landowner wells contribute the remainder of the 35 percent of the water supply required to irrigate district crops.

Kern-Tulare Water District

KTWD is located on the eastern side of the San Joaquin Valley in Kern and Tulare Counties, approximately 8 miles east of Delano and 27 miles north of Bakersfield. KTWD is approximately 4 miles in width, generally located west of State Highway 65, and extends approximately 14 miles from Sherwood Avenue to Avenue 48.

The only known natural waterways within KTWD boundaries are the White River and the Rag Gulch. The district does not control or have water rights related to either of these intermittent streams. KTWD has a CVP Cross Valley contract supply of 53,300 af/yr of water.

KTWD’s facilities consist of 12 pumping plants, 4 reservoirs and approximately 65 miles of pressure pipeline to deliver water upslope from the FKC. At the present time, 91 percent of all crops are irrigated using the drip or micro-sprinkler irrigation method. This high percentage of low volume irrigation practices results in a very high irrigation efficiency, which does not require spill or tailwater recovery systems.

Although KTWD is a Cross Valley CVP contractor located on the eastside of the San Joaquin Valley, its CVP supplies are physically delivered from the Delta. KTWD has a limited and more expensive direct connection to receive its CVP water supplies from the Delta. Additionally due to the timing of water availability, KTWD needs to receive their water in a different delivery pattern than it is typically available. To solve these problems, KTWD engages in exchanges of water with Arvin-Edison Water Storage District, KCWA or others for Friant CVP water, SWP water or delivers their water by reverse flow in the FKC.

KTWD has little if any useable groundwater.

Madera Irrigation District

MID is a CVP contractor. MID's predecessor in the late 1880's, Madera Flume and Trading Company, obtained an appropriative right to divert the first 50 cubic feet per second of flow out of North Willow Creek at Soquel Meadow. North Willow Creek is a tributary to the San Joaquin River. This right was established prior to enactment of the California Water Commission Act of 1913 and is exercised independent of CVP operations.

MID has a CVP water supply contract for delivery from the Friant Division of 85,000 af/yr of Class 1 water and 186,000 af/yr of Class 2 water, both for irrigation purposes (long-term renewal contract No. 175r-2891-LTR1; February 21, 2001). Class 1 water is "firm" supply and Class 2 water is less reliable water that may be available after all Class 1 obligations in the Friant Division have been met. MID's yield from the Friant Division averaged 106,346 af/yr of water during the period from 2000 to 2009.

Water available from behind Friant Dam is diverted into the Madera Canal. MID receives water from the Madera Canal through diversions into the district at Lateral 6.2, Hildreth Creek (sporadically), the Fresno River (Lateral 18.8 with downstream diversion into the Main Canal), Dry Creek (Lateral 24.2), Berenda Creek, and at Lateral 32.2.

MID also has a contract with Reclamation that makes available for delivery to MID "the entire quantity of CVP water from Hidden Unit for irrigation purposes" (long-term renewal contract No. 14-06-200-4020A-LTR1; February 21, 2001). The Hidden Unit includes CVP water stored or flowing through Hensley Lake on the Fresno River. The yield from the Hidden Unit averages 46,410 af/yr of water. The Corps of Engineers, which operates Hidden Dam/Hensley Lake, releases water down the Fresno River from Hensley for diversion by MID into its Main Canal. The Fresno river is typically dry downstream of the MID diversion. However when flood control parameters have been exceeded, excess flows are released past the MID diversion. In some years, flows in excess of MID needs extend to the Eastside Bypass for short periods. MID also uses the Fresno River channel to convey Friant water from the Madera Canal to the Main Canal diversion.

In addition, MID has pre-1914 water rights that average 7,938 af/yr from Big Creek and average 8,981 af/yr from Soquel Creek. Water from Soquel Creek is stored in Bass Lake and then flows into Millerton Lake and is diverted into the Madera Canal. Water from Big Creek is diverted to Hensley Lake.

Friant Division Section 215 water is also occasionally available to MID. -Section 215 water is CVP water that is determined to be available by Reclamation at Friant Dam as the result of an unusually

large water supply not otherwise storable for CVP purposes or infrequent and otherwise unmanaged floodflows of short duration. To obtain this supply MID must enter into a temporary contract with Reclamation, not to exceed 1 year.

MID diverts the majority of its surface water from the sources noted above to district farmers. The remaining surface water has been recharged (with a small amount lost to evapotranspiration) through MID conveyances, recharged at eight existing percolation facilities, or incidentally recharged as a result of spills.

MID also utilizes its groundwater aquifer for conjunctive use and groundwater banking. Pilot projects to bank water in the underground have been conducted and MID is requesting approval for banking outside its service area but in an adjacent district-owned banking facility being planned at Madera Ranch.

North Kern Water Storage District

NKWSD is located just north of Bakersfield, California, Kern County and encompasses approximately 70,000 acres. NKWSD was organized in 1935 and in 1950 acquired rights to use water from Kern River, land for spreading ponds and rights-of-way for constructing canals along with gates, weirs, laterals and pipelines. NKWSD not only stores ("banks") water in the underground through groundwater replenishment programs but also has acquired rights to store and reregulate its Kern River water supplies in Isabella Reservoir (NKWSD 2008).

The historical surface water supplies of NKWSD (1950) have ranged from 6,000 af in a dry year to nearly 394,000 af in a wet year owing to the highly variable Kern River supply. NKWSD has been forced to regulate available surface water supplies from times of surplus (wet years) to times of need (dry years). This regulation has been accomplished, to a large extent, through use of the underlying groundwater reservoir. During wet years on the Kern River, significant deliveries of surface water are made to irrigation and spreading (for groundwater recharge). For the purpose of groundwater recharge, NKWSD makes use of about 1,500 acres of recharge basins (water spreading areas), the dry channel of Poso Creek, and several other controlled-flow facilities to recharge groundwater. In wet years, more than 200,000 af of water have been directed into recharge basins for replenishment of the groundwater aquifer. During dry years, deliveries of surface water for irrigation are greatly reduced and groundwater pumping is significant. Extraction of groundwater from district wells has ranged from zero to more than 80,000 af in one year. NKWSD has successfully operated its conjunctive use project for 50 years. The underlying groundwater is part of the larger groundwater basin which underlies the southern San Joaquin Valley. While NKWSD is in balance with respect to water supplies and uses within its boundaries, groundwater levels are tied to the larger basin, which is in a condition of overdraft.

After the project above was implemented in1950 by NKWSD, lands were annexed to NKWSD with the specific requirement that the newly annexed lands would not share in the water supplies of the original project. The lands thus developed a distinct and separate project with the purchase of water supplies during wet years from Kern River rights of the City of Bakersfield. The Rosedale Ranch project (1979) has approximately 14 miles of unlined canals for the direct delivery of water for irrigation. The focus of the project was groundwater recharge through a combination of in-lieu-pumping deliveries and canal losses which has totaled up to 31,000 af. NKWSD does not supply M&I water service.

The FKC bisects NKWSD with less than 50 percent of NKWSD being uphill of the FKC. NKWSD has a pump station on the Calloway Canal at Kimberlina Road that is used to deliver water supplies to SWID via SWID's north pipeline. The pump station can also allow water to flow into the Calloway Canal at this location. NKWSD also has a gravity outlet on the Calloway Canal near the intersection of Cherry and Fresno Avenues that is used to deliver water supplies from SWID's south pipeline into the Calloway Canal. Finally, water supplies delivered at the end of the FKC can be exchanged for Kern River supplies being delivered at lower elevations. The Kern River supplies intended for lower elevations can be diverted into NKSWD's higher elevation Beardsley Canal to be delivered to lands uphill of the FKC.

Shafter-Wasco Irrigation District

SWID is located in Kern County about 20 miles northwest of Bakersfield. SWID was formed in 1937 and is comprised of 38,766 acres, of which 32,000 are irrigable. Included within SWID's boundaries are the cities of Shafter and Wasco covering approximately 2,400 acres.

SWID entered into a long-term renewal contract with Reclamation in 2001 for 50,000 af/yr of Class 1 and 39,600 af/yr of Class 2 water. SWID does not have any other long-term surface water supplies. SWID provides water for agricultural use only.

SWID obtains its CVP water supplies from two turnouts on the FKC at milepost (MP) 134.4 and 137.2. SWID's distribution system is 0.3 miles of lined canals and 117 miles of pipeline. SWID does not own or operate any water storage facilities or groundwater extraction facilities. Landowners must provide wells to meet irrigation demands when SWID does not have adequate surface water supplies available.

Southern San Joaquin Municipal Utility District

SSJMUD was formed in 1935, and is located in Kern County, approximately 75 miles southeast of Fresno and 30 miles northwest of Bakersfield. The cities of Delano and McFarland are within the District's boundaries but are not serviced by SSJMUD.

SSJMUD entered into a long-term renewal contract with Reclamation in 2001 for 97,000 af/yr of Class 1 and 50,000 af/yr of Class 2 water. SSJMUD does not have other long-term surface water supplies.

SSJMUD obtains its CVP water supplies from nine diversion points on the FKC between MP 119.6 and 130.4. SSJMUD's distribution system is 158 miles of pipeline. SSJMUD operates 11 regulating reservoirs that provide groundwater recharge. Poso Creek and other smaller foothill drainages provide recharge to the groundwater. SSJMUD does not own and operate groundwater production facilities. Landowners must utilize wells to irrigate during times when SSJMUD does not have surface water supplies available to meet irrigation demands.

Central Valley Project Facilities

The FKC carries water over 151.8 miles in a southerly direction from Millerton Lake to the Kern River, four miles west of Bakersfield. The water is used for supplemental and new irrigation supplies in Fresno, Tulare, and Kern Counties. Construction of the canal began in 1945 and was completed in 1951. The canal has an initial capacity of 5,000 cubic feet per second that gradually decreases to 2,000 cubic feet per second at its terminus in the Kern River (Reclamation 2007).

3.1.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not approve the exchange. Contractor operations would continue unchanged, as would the existing diversion points or operations for other contractors. Groundwater, of lesser quality than exchanged or imported water, would continue to be used to supplement the irrigation of crops in the Exchanging/Receiving Agencies. Supplies to PCA and PFC lands would not be supplemented and farming operations would need to operate with existing supplies. The project proponent could look to identify other exchangers with uncertain results and effects to supplemental water supplies and required use of groundwater.

Proposed Action

Under the Proposed Action, exchange water would be conveyed in existing facilities to established agricultural lands. The exchange would be a "bucket for bucket" exchange over a period of years and would not increase or decrease CVP allocations. The amount of water to be exchanged is small when considering overall water supplies of the exchanging/ receiving districts. There would be no effect to contractor operations and no change in the existing diversion points or operations for other contractors. It would not interfere with CVP deliveries or deliveries by the Exchanging/Receiving Agencies.

TID would receive the same water allocation with or without the Proposed Action.

3.2 Land Use

3.2.1 Affected Environment

As of October 27, 2009, the USDA had granted agricultural disaster designations, either primary, contiguous, or both due to drought, for 50 of California's 58 counties. So far 25 California counties have requested primary designations and provided the California Emergency Management Agency with estimates of the dollar value of their drought-related losses for one or more crops for various reporting periods. The total loss for all the reporting counties is about $876.0 million, with Fresno, Kern and Madera counties making up $738.6 million (http://www.water.ca.gov/drought/).

Tulare Irrigation District

TID currently encompasses 70,000 acres, of which, approximately 62,000 are irrigated. The main crops in TID are alfalfa, field corn, wheat and cotton.

Paramount Citrus Association

PCA farms approximately 19,000 acres of Navel oranges, lemons, Valencia oranges, Clementine mandarin oranges, and other citrus varieties in the Imperial, Kern, Madera, Tulare and Ventura counties of California.

Paramount Farming Company
PFC is the largest grower and processor of almonds and pistachios in the world. PCA's large processing and storage facilities span more than 1.3 million square feet. At 40,000 acres, PFC's almond orchards are the largest in the world. PFC is the world's largest vertically integrated supplier of pistachios and almonds with more than 70,000 acres of prime pistachio and almond orchards located in California's San Joaquin Valley. PFC's 30,000 acres of pistachio orchards are the largest in the Western Hemisphere.

Cawelo Water District
As of 2000, the total area of CWD was 45,079 acres including a service area of 33,320 acres. Land use in 2000 in the service area consisted of 29,657 acres of irrigated agriculture, 3,313 acres of fallow and 350 acres devoted to other uses including waterways, residential, commercial and agriculture-related businesses.

Approximately 85 percent of the irrigated lands served by CWD are planted to trees and vines (principally grapes, citrus, deciduous fruit, and nuts).

Kern-Tulare Water District
KTWD was formed in 1974 and is comprised of 14,000 acres. KTWD has a Cross Valley contract supply of 40,000 af/yr. The main crops in KTWD are citrus, subtropical orchards, grapes and nuts.

Madera Irrigation District
MID is located in Madera County and is south of the City of Chowchilla and north of the City of Fresno. It has approximately 88,000 acres of farmed land of which 77,000 acres are permanent crops. The main crops in MID are grapes, almonds, cotton, cereals, and grasses.

North Kern Water Storage District
NKWSD is situated in the San Joaquin Valley portion of Kern County and encompasses about 70,000 acres divided into two project areas. These are the1950 NKWSD project covering about 60,000 acres, and the 1979 Rosedale Ranch Improvement District project, which covers about 19,000 acres. Both projects are fully developed to support irrigated agriculture, with almonds and grapes accounting for about 50 percent of the cropped area and stone fruit comprising the remaining amount.

Shafter-Wasco Irrigation District
SWID is comprised of 38,766 acres, of which 32,000 are irrigable. The main crops in SWID are almonds, cotton, alfalfa, nursery stock, grains, grapes, black-eyed beans and carrots.

Southern San Joaquin Municipal Utility District
SSJMUD is comprised of approximately 61,000 acres, of which 47,000 are irrigable. The main crops in SSJMUD are alfalfa, citrus, grapes, cotton, nuts and barley.

3.2.2 Environmental Consequences

No Action
Under the No Action Alternative there would not be any specific land uses changes or impacts, as no new water supplies to support any changes would be available. Current land uses would be supported by the continued pumping of groundwater which would be available through the foreseeable future. Land owners within the Receiving/Exchanging Agencies might seek outside

sources of water to change land use patterns, but such sources are not within the scope of this document to analyze. No impacts to land use are foreseen.

Proposed Action

Under the Proposed Action there would not be any land conversions, and no land fallowing or habitat restoration would be deferred as a result of this exchange. No lands would be annexed into any service area to specifically use the exchanged water. The Donor Entity (PCA's Rayo Ranch) is exclusively citrus. The Receiving/Exchanging Agencies are dominated by orchards. The Facilitating Agency (TID) is predominantly agricultural. Based on historic patterns of water exchange and agricultural economics, land use and cropping patterns are unlikely to change within any of the agencies as a result of the proposed exchange. The Proposed Action simply represents the optimization of the use of water. The Proposed Action is not expected to have an impact on land use.

3.3 Biological Resources

3.3.1 Affected Environment

Native habitat types include valley sink scrub and saltbush, grasslands, wetlands, riparian habitat, and oak woodlands, but much of the historic native grassland, woodland, and wetland habitat were converted to farmland decades ago. The action area is the southern San Joaquin Valley and includes those portions of Madera, Fresno, Kings, Tulare, and Kern counties that encompass the service area boundaries of the participating districts.

A list of species protected under the federal Endangered Species Act (16 USC 1531 et. seq.) was obtained on March 29, 2010 (Document #100329013104) by accessing the U.S. Fish and Wildlife Service (Service) Database: http://www.fws.gov/pacific/sacramento/es/spp_lists. The list is for the following USGS 7½ minute quadrangles: Stevens, Gosford, Rio Bravo, Tupman, Belridge, Carneros Rocks, Deepwell Ranch, McFarland, Famoso, North of Oildale, Pond, Wasco NW, Wasco SW, Wasco, Lost Hills NW, Lost Hills, Semitropic, Antelope Plain, Emigrant Hill, Shale Point, Blackwells Corner, Sawtooth Ridge, Ducor, Sausalito School, Delano East, Richgrove, Delano West, Lone Tree Well, Avenal Gap, West Camp, Porterville, Tulare, Paige, Taylor Weir, Waukena, Corcoran, Kaweah, Woodlake, Ivanhoe, Rocky Hill, Goshen Visalia, Remnoy, Stokes Mtn., Orange Cove North, Wahtoke, Orange Cove South, Piedra, Academy, Friant, Round Mountain, Lanes Bridge, Gregg, Herndon, Madera, Bonita Ranch, Gravelly Ford, Biola, Firebaugh NE, Lake West, Millerton Lake East, Daulton, Raynor Creek, Berenda, Kismet, and Chowchilla.

Common Name	Scientific Name	Federal Status[1]	Critical Habitat[2]	Effect[3]
Invertebrates				
Conservancy fairy shrimp	*Branchinecta conservatio*	E	X	NE - No vernal pool habitat affected, no critical habitat affected
vernal pool fairy shrimp	*Branchinecta lynchi*	T	X	NE - No vernal pool habitat affected, no critical habitat affected

Common Name	Scientific Name	Federal Status[1]	Critical Habitat[2]	Effect[3]
valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T		NE - No disturbance of elderberry plants
vernal pool tadpole shrimp	*Lepidurus packardi*	E	X	NE - No vernal pool habitat affected, no critical habitat affected
Fish				
delta smelt	*Hypomesus transpacificus*	T		NE - No effects to species or occupied habitat. No effect on water quality or flows in occupied habitat.
Central Valley steelhead	*Oncorhynchus mykiss*	T		NE - No effects to species or occupied habitat. No effect on water quality or flows in occupied habitat.
Amphibians				
California tiger salamander, central population	*Ambystoma californiense*	T	X	NE - No vernal pool habitat affected, no critical habitat affected. No change in land use or disturbance of native lands.
California red-legged frog	*Rana aurora draytonii*	T		NE - No change in land use, frogs absent from action area
mountain yellow-legged frog	*Rana muscosa*	C		NE - No change in land use, frogs absent from action area
Reptiles				
blunt-nosed leopard lizard	*Gambelia (=Crotaphytus) sila*	E		NE - No conversion of native lands, no land use change
giant garter snake	*Thamnophis gigas*	T		NE - No change in habitat use
Birds				

Common Name	Scientific Name	Federal Status[1]	Critical Habitat[2]	Effect[3]
western snowy plover	*Charadrius alexandrinus nivosus*	T		NE - No change in land use, no disturbance of native lands
southwestern willow flycatcher	*Empidonax traillii extimus*	E		NE - No change in land use
California condor	*Gymnogyps californianus*	E		NE - No change in land use
Mammals				
giant kangaroo rat	*Dipodomys ingens*	E		NE - No land use change, no disturbance of native lands
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	E		NE - No land use change, no disturbance of native lands
Tipton kangaroo rat	*Dipodomys nitratoides nitratoides*	E		NE - No land use change, no disturbance of native lands
Buena Vista Lake shrew	*Sorex ornatus relictus*	E		NE - No change in land use
San Joaquin kit fox	*Vulpes macrotis mutica*	E		NE - No land use change, no disturbance of native lands
Plants				
succulent (=fleshy) owl's-clover	*Castilleja campestris ssp. succulenta*	T	X	NE - No land use change, no effects to vernal pools, no critical habitat affected
California jewelflower	*Caulanthus californicus*	E		NE- No land use change, no disturbance to native lands
Hoover's spurge	*Chamaesyce hooveri*	T	X	NE - No land use change, no effects to vernal pools, no critical habitat affected
Springville clarkia	*Clarkia springvillensis*	T		
palmate-bracted bird's-beak	*Cordylanthus palmatus*	E		NE- No land use change, no disturbance to native lands

Common Name	Scientific Name	Federal Status[1]	Critical Habitat[2]	Effect[3]
Kern mallow	*Eremalche kernensis*	E		NE - No land use change
San Joaquin woolly-threads	*Monolopia congdonii (=Lembertia congdonii)*	E		NE - No land use change
Bakersfield cactus	*Opuntia treleasei*	E		NE - No land use change, no disturbance of native lands
San Joaquin Valley Orcutt grass	*Orcuttia inaequalis*	T	X	NE - No land use change, no effects to vernal pools, no critical habitat affected
hairy Orcutt grass	*Orcuttia pilosa*	E	X	NE - No land use change, no effects to vernal pools, no critical habitat affected
Hartweg's golden sunburst	*Pseudobahia bahiifolia*	E		NE - No land use change, no disturbance of native lands
San Joaquin adobe sunburst	*Pseudobahia peirsonii*	T		NE - No land use change, no disturbance of native lands
Keck's checker-mallow (=checkerbloom)	*Sidalcea keckii*	E	X	NE - No land use change, no disturbance of native lands, no critical habitat affected
Greene's tuctoria (=Orcutt grass)	*Tuctoria greenei*	E	X	NE - No land use change, no effects to vernal pools, no critical habitat affected
[1]E - Endangered, C - Candidate, T - Threatened				
[2]X - Present in Action Area				
[3]NE - No Effect				

Table 3-2 Threatened and Endangered Species List and Designated Critical Habitat in Encompassing Participating Districts

Beginning in 1991, a Biological Opinion from the U.S. Fish and Wildlife Service (Service) specified measures for the Friant water service contractors to avoid jeopardy to endangered and threatened species, and committed Reclamation to developing and implementing a long-term program to

address the needs of listed endangered species in the San Joaquin Valley. The *Biological Opinion on U.S. Bureau of Reclamation Long Term Contract Renewal of Friant Division and Cross Valley Unit Contractors*, dated January 19, 2001, is the most recent biological opinion issued by the Service for the Friant water service contractors.

The Central Valley steelhead and delta smelt and their critical habitat are outside of the area of effect.

Paramount Citrus Association

The PCA spans the counties of Fresno, Tulare, and Kern. While Federally listed species can occur in close proximity to PCA lands, no Federally listed species occur on PCA lands. No changes to land use would occur on the PCA lands.

Paramount Farming Company

PFC lands in Kern County may harbor the San Joaquin kit fox. PFC worked with the environmental defense fund and the Endangered Species Recovery Program to install artificial kit fox dens on some of their lands. Land use would not change on PFC lands and therefore listed species would not be affected.

Cawelo Water District

The Service lists thirteen Federally listed threatened or endangered plants and animals, or plants and animals proposed for listing that occur or are likely to occur within CWD. Out of these, three species have been sighted in CWD according to the California Department of Fish and Game Natural Diversity Data Base (CNDDB), including blunt-nosed leopard lizard, San Joaquin kit fox and San Joaquin woolly-threads.

Kern-Tulare Water District

The Service lists ten Federally listed threatened or endangered plants and animals, or plants and animals proposed for listing that occur or are likely to occur within KTWD. Out of these, four species have been sighted in KTWD according to the CNDDB, including blunt-nosed leopard lizard, San Joaquin kit fox, California jewel-flower and San Joaquin adobe sunburst.

Madera Irrigation District

The Service lists eighteen Federally listed threatened or endangered plants and animals, or plants and animals proposed for listing that occur or are likely to occur within MID. Out of these, seven species have been sighted in MID according to the CNDDB, including blunt-nosed leopard lizard, Fresno kangaroo rat, California tiger salamander, San Joaquin Valley Orcutt grass, Greene's tuctoria, hairy Orcutt grass and vernal pool fairy shrimp.

North Kern Water Storage District

The Service lists fourteen Federally listed threatened or endangered plants and animals, or plants and animals proposed for listing that occur or are likely to occur within NKWSD. Out of these, seven species have been sighted in NKWSD according to the CNDDB, including blunt-nosed leopard lizard, San Joaquin kit fox, California jewel-flower, San Joaquin woolly-threads, giant garter snake, Buena Vista Lake shrew and valley elderberry longhorn beetle.

Shafter-Wasco Irrigation District
The Service lists thirteen Federally listed threatened or endangered plants and animals, or plants and animals proposed for listing that occur or are likely to occur within SWID. Out of these, three species have been sighted in SWID according to the CNDDB, including San Joaquin kit fox, California jewel-flower and San Joaquin woolly-threads.

Southern San Joaquin Municipal Utility District
The Service lists thirteen Federally listed threatened or endangered plants and animals, or plants and animals proposed for listing that occur or are likely to occur within SSJMUD. Out of these, four species have been sighted in SSJMUD according to the CNDDB, including San Joaquin kit fox, California jewel-flower, blunt-nosed leopard lizard and Tipton kangaroo rat.

Tulare Irrigation District
The Service lists fourteen Federally listed threatened or endangered plants and animals, or plants and animals proposed for listing that occur or are likely to occur within TID. Of these, four species have been sighted in TID according to the CNDDB, including San Joaquin kit fox, California jewel-flower, blunt-nosed leopard lizard, San Joaquin adobe sunburst and vernal pool fairy shrimp.

3.3.2 Environmental Consequences

No Action
Under the No Action Alternative, contractor operations would continue unchanged, as would the existing diversion points or operations for other contractors. Groundwater, of lesser quality than exchanged or imported water, would continue to be used to supplement the irrigation of crops in the Receiving/Exchanging Agencies. The No Action Alternative would neither hinder nor enhance wildlife, migratory birds, and special status species and habitats.

Proposed Action
Under the Proposed Action, exchange water would be conveyed in existing facilities to established agricultural lands. No native, untilled, or similar habitats would be disturbed. The Proposed Action would not affect migratory birds, imperiled species, unique habitats, or species and habitats protected by federal or state law.

No Essential Fish Habitat exists in the authorized Place of Use within the bounds of the agencies. The Proposed Action would not affect essential fish habitat.

Reclamation has determined that the Proposed Action would have no effect on Federally listed threatened or endangered species, designated critical habitat, or proposed or candidate species and critical habitat for reasons identified in Table 3-2.

3.4 Socioeconomic Resources

3.4.1 Affected Environment
The service area of the agencies is primarily rural agricultural land; however, there are many communities across the area where farm workers reside. The small businesses that support agriculture such as feed and fertilizer sales, machinery sales and service, pesticide applicators, transport, packaging, marketing, and so forth rely on the efficient and cost effective use of water in

the surrounding agricultural lands to sustain the agriculturally based economy. The cost and availability of water has historically had a direct secondary economic impact on the communities of the area as it can drive the type of crop grown or the potential fallowing of land.

3.4.2 Environmental Consequences

No Action

Under the No Action Alternative, contractor operations would continue unchanged, as would the existing diversion points or operations for other contractors. Groundwater, of lesser quality and higher cost than exchanged or imported water, would continue to be used to supplement the irrigation of crops in the Receiving/Exchanging Agencies. While the No Action Alternative would be less cost effective than the Proposed Action, it would have a negligible effect to the local economy.

Proposed Action

The Proposed Action would not cause an economic hardship. Seasonal labor requirements would not change, and agriculture dependent businesses would not be affected. No adverse effects on public health and safety would occur. The exchanged water delivered for irrigation of crops in the Receiving/Exchanging Agencies, which would replace pumped groundwater, is of slightly better quality and may improve crop yield. The Proposed Action represents the optimization of water supplies resulting from implementation of water conservation technologies and reduced use of electrical energy in a state where energy resources are already limited. The Proposed Action is not expected to have an impact on socioeconomics resources.

3.5 Environmental Justice

3.5.1 Affected Environment

Executive Order 12898 requires that all federal agencies address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the U.S. and its territories.

Many of the cities and towns within the San Joaquin Valley are farming communities, and include high percentages of minority populations. Some areas are centers for migrant laborers whose livelihood depends exclusively on the seasonal agricultural practices providing them with sufficient income to support themselves and their families.

3.5.2 Environmental Consequences

No Action

Under the No Action Alternative, contractor operations would continue unchanged, as would the existing diversion points or operations for other contractors. Groundwater, of lesser quality and higher cost than exchanged or imported water, would continue to be used to supplement the irrigation of crops in the Receiving/Exchanging Agencies. While the No Action Alternative would be less cost effective than the Proposed Action, it would have a negligible effect to minority or disadvantaged populations.

Proposed Action

Under the Proposed Action there would be sustained agricultural production and would be no harm

done to minority or disadvantaged populations. The delivery of water at a reasonable price ensures low wage jobs are available. Agricultural employment conditions in Kern, Madera and Tulare Counties suggests that any actions that maintain seasonal jobs should be considered beneficial.

3.6 Global Climate Change

3.6.1 Affected Environment

Climate change refers to significant change in measures of climate (e.g. temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change (changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.) (EPA 2008a).

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are: carbon dioxide (CO2), methane (CH4), nitrous oxide, and fluorinated gasses (EPA 2008a).

During the past century humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil and gasoline to power our cars, factories, utilities and appliances. The added gases, primarily CO2 and CH4, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. There are uncertainties associated with the science of climate change (EPA 2008b).

More than 20 million Californians rely on the SWP and CVP. Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to California's water resources and project operations.

While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008).

3.6.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, contractor operations would continue unchanged, as would the existing diversion points or operations for other contractors. Groundwater, of lesser quality and higher cost than exchanged or imported water, would continue to be used to supplement the irrigation of crops in the Receiving/Exchanging Agencies.

Implementation of the No Action Alternative would have no change on the composition of the atmosphere and therefore would have no direct or indirect effects to climate.

Proposed Action

The Proposed Action would involve no physical changes to the environment, no construction activities, and therefore, would not directly impact GHG and global climate change. The exchanged water may require less groundwater pumping thereby slightly reducing CO_2 production, although the change would be miniscule in relation to background GHG production and would therefore not affect global climate change. However, global climate change is expected to have some effect on the snow pack of the Sierra Nevada's and the run off regime. Current data are not yet clear on the hydrologic changes and how they will affect the San Joaquin Valley. Water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's operation flexibility and therefore surface water resource changes due to climate change would be the same with or without the Proposed Action. Therefore, there would be no significant impact to the Proposed Action.

3.7 Cumulative Impacts

Contract execution would not have highly controversial or uncertain environmental effects or involve unique or unknown environmental risks. The Proposed Action does not trigger other water service actions and does not contribute to cumulative effects to physical resources when added to other water service actions. The reservoirs, rivers and creeks in the lower San Joaquin Valley associated with the Proposed Action and facilities are managed primarily for agricultural supplies. Diversions of water occur based on the hydrological environmental conditions. During wet seasons and high water flows, surplus water supplies are released and, if possible, marketed to quickly disperse this water to avoid flooding and damage downstream in the rivers. The Proposed Action would not interfere with deliveries, operations, or cause substantial adverse changes to the rivers, creeks or conveyance facilities.

The conveyance facilities and river systems in the lower San Joaquin Valley are interconnected and allow for a myriad of transfers, exchanges, contract assignments, and conveyances of water. These water service actions are common and are not precedent setting.

Another water service contract in the area is the TID In-Basin Exchange with Consolidated Peoples Ditch Company (CPDC) and Farmers Ditch Company (FDC). This project is a long-term exchange of up to 40,000 af/y of TID CVP water for an equal amount of non-CVP Kaweah River water from CPDC and/or FDC through February 2026. The disposition of this water is within TID's boundaries.

CWD has requested a long-term Warren Act (WA) Contract. Reclamation proposes to execute a long-term WA Contract to convey 10,000 af of non-CVP water from CWD to the California Aqueduct via the Lerdo Canal to the FKC (when capacity is available) and then through the CVC for recovery by Alameda County Flood Control and Water Conservation District Zone 7 (Zone 7). This Proposed Action is part of CWD's long-term In-Lieu Water Banking Program with Zone 7. The disposition of this water is within CWD and Zone 7.

Reclamation is also proposing to execute a Friant Division five-year WA Contract. Under this Proposed Action, MID, Lindsay-Strathmore Irrigation District and KTWD would request WA Contracts. The quantity of water that would be requested is not known at this time.

A groundwater banking project is also being proposed, the *Madera Irrigation District Water Supply Enhancement Project*, wherein MID would modify its and Reclamation's distribution systems to convey CVP water to the Madera Ranch for groundwater storage.

The concurrent use would not affect CVP operations or CVP contractor's ability to obtain project deliveries. The Proposed Action involves an exchange of water resulting in no net cumulative impacts.

Section 4 Consultation and Coordination

4.1 Fish and Wildlife Coordination Act (16 USC Sec. 651 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The implementation of the CVPIA, of which this action is a part, has been jointly analyzed by Reclamation and the U.S. Fish and Wildlife Service and is being jointly implemented. No development of water supplies would occur as a result of the Proposed Action, and water would be diverted from natural courses. Therefore, there would be no coordination needed under the FWCA.

4.2 Endangered Species Act (16 USC Sec. 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

The Proposed Action Alternative would support existing uses and conditions. No construction or new facilities would be required to convey this water. Decisions to fallow lands are based on fluctuating hydrological and agricultural market conditions. Transfers and exchanges are typical methods for delivering water to areas with the highest beneficial use, i.e. permanent crops when water supplies are insufficient to meet demands.

Reclamation has concluded that the Proposed Action would not affect any Federally listed or proposed species or any proposed or designated critical habitat. This conclusion is based on the nature of the transfers and exchanges, which would not result in major changes to habitat types, shelter, or foraging opportunities for biological resources, as well as on the conditions given in the following paragraph.

No native lands would be converted or cultivated with CVP water. The water would not be used for land conversion. Lands that have been fallowed for three or more consecutive years would require biological surveys prior to preparations for changing land use (e.g. discing and planting). If sensitive biological resources are discovered, additional environmental analysis and consultations may be required in compliance with applicable laws prior to applying CVP water to these lands. These conditions would protect listed species (both the individuals and their habitat) and the primary

constituent elements of the critical habitats found within the area of effect.

4.3 National Historic Preservation Act (15 USC Sec. 470 et seq.)

Cultural resources is a term used to describe both 'archaeological sites' depicting evidence of past human use of the landscape and the 'built environment' which is represented in structures such as dams, roadways, and buildings. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation which outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 CFR Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action has the potential to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

The San Joaquin Valley is rich in historical and pre-historic cultural resources. Cultural resources in this area are generally prehistoric in nature and include remnants of native human populations that existed before European settlement. Many of the historic period resources are related to agricultural development in the region, including water conveyance features such as the CVP. The CVP is currently being evaluated for the National Register of Historic Places. Contributing elements to the larger CVP nomination include Friant Dam and the FKC. Friant Dam is located on the San Joaquin River, 25 miles northeast of Fresno, California. Completed in 1942, the dam is a concrete gravity structure, 319 feet high, with a crest length of 3,488 feet. The FKC carries water over 151.8 miles in a southerly direction from Millerton Lake to the Kern River, four miles west of Bakersfield. The water is used for supplemental and new irrigation supplies in Fresno, Tulare, and Kern Counties. Construction of the canal began in 1945 and was completed in 1951.

The proposed action will involve the delivery of water through existing facilities. There will be no modification of existing facilities and there will be ground disturbing actions. The proposed action is an administrative action which has no potential to cause effects to historic properties pursuant to the regulations at 36 CFR Part 800.3(a) (1). Because the proposed action has no potential to cause effects to historic properties, the proposed action will result in no effect to cultural resources requiring no further coordination or consultation.

4.4 Indian Trust Assets

ITAs are legal interests in property held in trust by the United States (US) for federally-recognized Indian tribes or individual Indians. An Indian trust has three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. ITAs can include land, minerals, federally-reserved hunting and fishing rights, federally-reserved water rights, and instream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally-recognized Indian tribes with trust land; the US is the trustee. By definition, ITAs cannot be sold, leased, or otherwise encumbered without approval of the US. The characterization and application of the US trust relationship have been defined by case law that interprets Congressional acts, executive orders, and historic treaty provisions.

Consistent with President William J. Clinton's 1994 memorandum, "Government-to- Government Relations with Native American Tribal Governments," Reclamation assesses the effect of its programs on tribal trust resources and federally-recognized tribal governments. Reclamation is tasked to actively engage federally-recognized tribal governments and consult with such tribes on government-to-government level (59 Federal Register 1994) when its actions affect ITAs. The Department of the Interior Departmental Manual Part 512.2 ascribes the responsibility for ensuring protection of ITAs to the heads of bureaus and offices. Part 512, Chapter 2 of the Departmental Manual states that it is the policy of the Department of the Interior to recognize and fulfill its legal obligations to identify, protect, and conserve the trust resources of federally recognized Indian tribes and tribal members. All bureaus are responsible for, among other things, identifying any impact of their plans, projects, programs or activities on ITAs; ensuring that potential impacts are explicitly addressed in planning, decision, and operational documents; and consulting with recognized tribes who may be affected by proposed activities.

The Proposed Action would not affect ITAs. The nearest ITA is Tule River Reservation, which is about 28 miles southeast of the Proposed Action location.

4.5 Migratory Bird Treaty Act (16 USC Sec. 703 et seq.)

The Migratory Bird Treaty Act implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the Act, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The Proposed Action would have no effect on birds protected by the Migratory Bird Treaty Act.

4.6 Executive Orders 11988–Floodplain Management and 11990-Protection of Wetlands

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands. The Proposed Action would not affect either concern.

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Section 6 References

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